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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/663,866	AYYAGARI, DEEPAK	
	Examiner	Art Unit	
	Jianye Wu	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/10/09*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-9,11,13-19 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-9,11,13-19 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments/Arguments

1. Applicant's arguments filed on 2/10/2009 have been fully considered and they are persuasive. Therefore, rejections have been vacated. However, upon further consideration, new ground rejections have been made.

2. For **claim objections** on **claim 1-4** and **14-19**, Applicant's argument is not persuasive. Claim 1 recites "classifying the application data in the transport protocol layer as internet protocol (IP) based and not-IP based". Here Internet Protocol is specifically described. It gives an impression that some data at the transport protocol layer may not go through IP layer, which is not consistent with FIG. 2 in which IP protocol layer is not present (Applicant recited FIG. 2 in the argument). In fact, the classification of application data should be done at the application layer instead of transportation layer. The transportation layer functions defined in OSI model include features like Segmentation and reassembly, Error Recovery, connection oriented and connectionless oriented, flow control, Reliable transport Service and etc. Data classification is not one of them.

3. For **claim 1**, Applicant argues:

a) the classification of application data "occurs *in the transport protocol layer*" not outside of the transport layer as asserted by Examiner (page 8, 1st and 2nd paragraphs);

b) Applicant argues "the socket was identified as the division between the application and protocol layer, Since AF_INET or AF_UNIX is set in the socket system call on the application side and not in the protocol layer responsive to the socket system call, anything that the choice **between AF_INET**

and AF_UNIX represents occurred outside of the transport protocol layer" (page 8, 2nd paragraph).

c) "no address, whether local or foreign, has been specified when the socket descriptor is returned by the socket system call" (page 8, last paragraph);

d) "Raphaeli is silent on IP, instead describing a powerline MAC layer. Thus, it does not suggest using a classification as IP or non-IP in determining if a powerline MAC connection exists. As Stevens is silent on these aspects, the Examiner is apparently relying on the knowledge of one skilled in the art to show that the determination of whether a connection exists is based on the classification as IP or non-IP".

In response, **Examiner respectfully disagrees**:

a) Figure 2 of drawing provided by Applicant clearly shows the data classification is outside of Transportation layer 36. The transportation layer functions defined in OSI model include features like Segmentation and reassembly, Error Recovery, connection oriented and connectionless oriented, flow control, Reliable transport Service and etc. Data classification is not one of them.

b) Applicant agrees that the data classification is outside of the transport layer, which is consistent with Examiner's position in response to a). Notice that layer structure is just a concept to help people to classify and understand protocol functions better. The focus should be on functions, not artificially defined concepts.

c) Applicant provides no supports that addresses could **not** be given. The omission of parameters in socket system calls (in FIG. 6.8 at page 269 of Steven) for purpose of the concise expression does not mean that the addresses could not be provided.

d) Raphaeli is used to disclose the limitation of powerline in the claim, not IP, in the Office Action. IP is taught by Steven as recited in the Office Action.

Claim Objections

4. **Claims 1-4** and **14-19** are objected.

Claim 1 recites “classifying the application data in the transport protocol layer as IP based”, line 6. IP is layer 3 while transport layer is layer 4, it is unclear how can a transport protocol layer be classified as IP based.

Claim 2-4 and 14-19 are objected because they depend from claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 1-4, 14-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over W. Richard Stevens, “UNIX Netwrok Programming”, 1990, (hereinafter **Stevens**) in view of Raphaeli et al (US 20030103521, hereinafter **Raphaeli**).

For **claim 1**, Stevens discloses a method of converting application data to transport data in a communication system the method comprising:

receiving application data in a transport protocol layer from an application (data from Application layer to Transport layer, Figure 5.28, page 240) in a device (a PC, suggested by “In many PC environments”, page 240) with through a service access point (a socket created by the socket System call, page 267, with description page 267-269, where the socket created by socket(int family, int *type*, int *protocol*) is an service access point), the service access point being one of a plurality of service access points of the transport protocol layer (families of socket, page 267, line 4-9 from bottom, each family provide a kind of services);

classifying the application data in the transport protocol layer as IP based (socket(int *family*, …) with *family* being AF_INET, page 267), or non-IP based (socket(int *family*, …) with *family* being AF_UNIX, page 267) according to the associated service access point after receiving the application data through the service access point (application data are received from the socket identified by socket descriptor, page 269, line 5 and page 260 Figure 6.1);

determining in the transport protocol layer if a connection exists for the application data in response to the classification of the application data (the return code of function socket() gives indication if a connection exists (< 0) or not (>0), disclosed in

C code sample in page 273, start with “if ((sockfd=socket(…))<0 …” with the classification application data as parameters of socket functions);

transmitting the transport data across the communication system (send(), sendto(), page 274).

Stevens **is silent on** the communication system is a power line communication system and does not explicitly disclose a higher protocol layer is serviced through a lower protocol layer.

Raphaeli teaches a power line communication system (FIG. 1, explained in [0008]) wherein a method of converting application data to transport data (application layer, [0005]) is described. Raphaeli also discloses a higher protocol layer is serviced through a lower protocol layer (FIG. 2, where a lower layer MAC provides service for upper layers). Stevens teaches IP network at network layer 3 and above, while Raphaeli discloses a specific communication system known as the power line communication system at network layer 2. One with ordinary skill in the art would have been motivated to combine them together to provide a full network stack of the power line communication system.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Stevens with Raphaeli in order to apply IP protocol to the power line communication system and providing a higher protocol layer service through a lower protocol layer.

As to **claim 2**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further teaches the method comprising automatically establishing a connection if none exists, comprising:

generating a connection specification based upon the application data and the service access point; and establishing a connection based upon the connection specification (sample code in page 273, line 9-35, which shows to establish a connection with desired configuration parameters as the parameters socket API functions used for creating the connection) and

mapping the application data into transport data for that connection (using socket API functions send(), sendto(), recv() and recvfrom(), page 274).

As to **claim 3**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further teaches wherein receiving application data from an application further comprises receiving connection-oriented application data from the application (using socket API functions recv() and recvfrom(), page 274).

As to **claim 4**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further teaches wherein receiving application data further comprises:

receiving connectionless application data from the application (setting up a connectionless connection via socket() with *family* parameter being set as SOCK_DGRAM, and protocol being set UDP, then using system calls recv() and recvfrom(), page 274); and mapping the connectionless application data into transport data for a power line communication system connection (using socket API functions send(), sendto(), recv() and recvfrom(), page 274); wherein the power line

communication system is connection-oriented (at MAC layer the power system is connection-oriented, as disclosed by Raphaeli in claim 1).

As to **claim 14**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Accessing a classification table (the table containing all values of 5-tupe, page 269, line 4-10) for a mapping of the service access point to a connection identifier (5-tupe, page 269, line 4-10, which identify a service access point); and

providing a connection associated with the connection identifier as the connection (the connection associated with the socket, as explained in claim 1).

As to **claim 15**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Accessing a classification table (the table in Figure 6.7, page 268 containing values for a set of parameter “5-tupe”, page 269, line 4-10) for a mapping of the service access point and at least one of an IP address, a port number, and a type of service field to the connection identifier (5-tupe, page 269, line 4-10, which includes the IP addresses and port numbers of both local and remote nodes, used as an identifier pf connection); and

Providing a connection associated with the connection identifier as the connection (the connection associated with the socket explained in claim 1).

As to **claim 16**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Accessing a classification table (the table in Figure 6.7, page 268 containing values for a set of parameter “5-tupe”, page 269, line 4-10) for a mapping of the service access point, an IP address to a connection identifier, a port number to the connection identifier (5-tupe, line 4-10, which includes the IP addresses and port numbers of both local and remote nodes).

Providing a connection associated with the connection identifier as the connection (the connection associated with the socket explained in claim 1).

As to **claim 17**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Comparing the application data with at least one classifier rule for a match (comparing values of 5-tupe, page 269, line 4-10 with the configured set); and

Providing a connection associated with a matching classifier rule as the connection (the connection associated with the socket explained in claim 1).

As to **claim 18**, Stevens and Raphaeli in combination disclose the method of claim 17, Stevens further discloses the method comprising:

Comparing the application data only with classifier rule associated with the service access point (comparing the 5-tupe at the receiving end socket, page 269, line 4-10).

7. **Claim 19 is** rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens in view of Raphaeli, further in view of Andrew S. Tanenbaum, “Computer Networks”, Forth edition, 8/9/2002 (hereinafter **Tanenbaum**).

As to **claim 19**, Stevens and Raphaeli in combination disclose the method of claim 17, comparing the application data only at least one destination address within the at least one classifier rule (comparing the destination address within the 5-tupe at the receiving end socket, page 269, line 4-10).

Stevens and Raphaeli do not explicitly disclose that application data that is audio/visual application data.

In the same field of endeavor, Tanenbaum discloses the application data include audio/visual application data (suggested by “how computer process audio and video”, Section 7.4, last paragraph).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teachings by Stevens with Raphaeli to audio/visual application data disclosed by Tanenbaum in order to provide broad services.

8. **Claims 6-7, 9** and **21-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrew S. Tanenbaum, “Computer Networks”, Forth edition, 8/9/2002 (hereinafter **Tanenbaum**) in view of Stevens, further in view of Hogan et al. (US Patent 4,841,456, hereinafter Hogan).

For **Claim 6**, Tanenbaum discloses a method of transmitting data on a network, the method comprising:

receiving an incoming data packet from an application on a device at one of a plurality of service access points of a first protocol layer (TSAP, Figure 6-8; or Lines 1-2

of first paragraph of Section 6.2.1, where a service access point of a protocol layer TSAP is considered as one of a plurality of sockets);

associating the packet with a connection (Fig. 6-8, the packet entering TSAP is associated with the connection indicated by dot line);

routing the packet to the connection (“routing packets”, Lines 1-3 of first paragraph of Section 5.2) established at an interface between the first protocol layer and a second protocol layer, wherein the second protocol layer is a lower level protocol layer (Fig. 6-8, where first protocol layer is Transport layer of Host 1, and second protocol layer is Network layer of Host 2).

Tanenbaum does not explicitly discloses classifying the data packet in the first protocol layer in a classifier associated with the service access point, including: determining an order of rules associated with the classifier to apply to the data packet using a priority of each of the rules; applying the rules to the data packet to the order, including when applying a particular rule to the data packet: for each classification parameter of the rule, comparing a field of the data packet identified by a parameter ID of the classification parameter with a value of the classification parameter; and if for each classification parameter of the rule, a matching value is found in the data packet, causing the packet to be associated with a connection associated with the rule.

in the same field of endeavor, Stevens discloses classifying the data packet in the first protocol layer in a classifier (parameters family, type, protocol of the socket function, page 267) associated with the service access point, including: determining an order of rules associated with the classifier to apply to the data packet using a (rules

specified in Figure 6.7, page 268); applying the rules to the data packet to the order, including when applying a particular rule to the data packet (function socket(), page 267, which implements rules according to parameters of the function): for each classification parameter of the rule, comparing a field of the data packet identified by a parameter ID of the classification parameter with a value of the classification parameter; and if for each classification parameter of the rule, a matching value is found in the data packet, causing the packet to be associated with a connection associated with the rule (parameters and associated rules specified in Figure 6.7, page 268 for function socket to implement on the packet with associated connection).

Stevens simply teaches details of the socket that is disclosed by Tanenbaum, therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine modify socket by Tanenbaum with the detailed socket features disclosed by Stevens to provide desired network service.

Tanenbaum in view of Stevens does not explicitly disclose using priority of each of the rules.

Hogan discloses apply priority of to each of the rules (“A typical priority rule might be that the rule having the highest number of conditions (i.e., a specific rule) has priority over a rule having a smaller number of conditions”, col. 8, line 28-31). The Hogan’s teaching is very general and applies to any set of rules.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the priority from the socket priority parameter by Hogan

when apply the rules by Tanenbaum in view of Stevens to more effectively and reasonably implement the rules.

As to **claim 7**, Tanenbaum and Stevens and Hogan in combination disclose the method of claim 6, Tanenbaum further teaches the method comprising fragmenting the packet into smaller packets as needed based upon the packet size (“maximum packet size, … break it into 4 packets”, Section 5.1.3).

As to **claim 9**, Tanenbaum and Stevens and Hogan in combination disclose the method of claim 6, Tanenbaum teaches classifying the data packet further comprising determining if a connection exists for the packet, and requesting a connection if a connection does not exist (Section 6.1.4, the server code section of /* Passive open, Wait for connection. */, wherein [s=socket(…), if (s<0) fatal(socket failed) …] suggest that if the value of s < 0, the socket exists already; otherwise, it successfully creates a socket for a new connection).

As to **claim 21**, Tanenbaum in view of Stevens and Hogan discloses the method of claim 6, comprising the priority associated with the rule (as disclosed in claim 6 by Hogan); a connection identifier (socket parameter *type*, Section 6.1.3, which is a part of connection identifier of socket, has the value of SOCK_STREAM, SOCK_DGRAM, SOCK_RAW and etc, with SOCK_STREAM has the highest priority, page 268, line 7-13, Steven); a transport layer port (each transport layer port represents an application, for example, a TCP port 23 for telnet has a higher priority than a TCP port 25 for SMTP used by e-mail, Section 8.6.2 and 7.4.4 of Tanenbaum); and at least one classification parameter, each classification parameter including a parameter ID and a value (IP

destination address and IP destination Port; Section 6.5.4; this is the same as disclosed in the specification in [0062]).

As to **claim 22**, Tanenbaum in view of Stevens and Hogan discloses the method of claim 21, Tanenbaum further discloses each rule associated with audio/visual application data (suggested by “how computer process audio and video”, Section 7.4, last paragraph), the rule includes only one classification parameter (the IP address of a customer’s house for "a video on demand system” shown in Figure 7-78, Section 7.4.8).

As to **claim 23**, Tanenbaum in view of Stevens and Hogan discloses the method of claim 22, Tanenbaum further discloses each rule associated with audio/visual application data (Figure 7-78, Video-on-demand system), the classification parameter of the rule includes a destination address as the parameter ID (the IP address of a customer’s house for "a video on demand system” shown in Figure 7-78, Section 7.4.8).

9. **Claims 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over S. Tanenbaum in view Stevens and Hogan, further in view of Malkin (US 6272145 B1).

As to **claim 8**, Tanenbaum in view Stevens and Hogan discloses the method of claim 6, the method comprising fragmenting the packet into smaller packets as needed (“maximum packet size, … break it into 4 packets”, Section 5.1.3).

Tanenbaum **does not** explicitly teach that the fragmenting depends upon the bandwidth of the connection.

In the same field of endeavor, Malkin discloses the fragmenting depends upon the bandwidth of the connection ("size of the different fragment will vary depending on … bandwidth of each link", col. 7, line 26-28).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to fragmenting depends upon the bandwidth of the connection for the benefit of efficiency and quality of service enhancement of network operation.

10. **Claims 11, 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens in view of Hogan.

For **Claim 11**, Stevens discloses a method of classifying data packets in a communication system, the method comprising:

analyzing an incoming data packet according to a plurality of sets of parameters (sets of socket parameters, such as *family, type, protocol*, and etc, Page 267, different types of socket has different types of parameters), wherein the sets of parameters analyzed depends upon a type of service access point (socket *type* of socket system call, Page 267) from which the data packet came, and the sets of parameters are used in analyzing the data packet according to an order of the priorities of the sets of parameters (such as parameters *family*, *type* and *protocol,* Page 267-268; or 5-tuple parameters of socket system call, page 269, line 8-9); if the set of parameters in the data packet match a predefined set of parameters associated with connection, associating a connection (a connection is identified by socket descriptor, page 269, line

5) for the predefined set of parameters with the packet (5-tuple parameters of socket system call, page 269, line 8-9).

Steven does not explicitly disclose each set of parameters includes a priority;

Hogan discloses apply priority of to each of the rules ("A typical priority rule might be that the rule having the highest number of conditions (i.e., a specific rule) has priority over a rule having a smaller number of conditions", col. 8, line 28-31). The Hogan's teaching is very general and applies to any set of rules.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Stevens with Hogan in order to apply socket API to Internet ([0016]).

As to **claim 13**, Stevens in view of Hogan discloses the method of claim 11, Stevens further discloses that the method comprising transmitting parameters of the data packet to a connection manager if the parameters of the data packet do not match a predefined set of parameters (page 283, line 5-6, if (sendto(sockfd, mesg, n, 0, pcli_addr, clilen) !=n) err_dump("dg_echo: sendto error"); where the connection manager is the Operating System, the n bytes of data to be sent to specified socketfd and pcli_addr must match with the number of data byte sent).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianye Wu whose telephone number is (571)270-1665. The examiner can normally be reached on Monday to Thursday, 8am to 7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jianye Wu/

Examiner, Art Unit 2416

/Kevin C. Harper/

Primary Examiner, Art Unit 2416